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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,781	02/23/2004	Seiji Ogasawara	01272.020664	5485

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EXAMINER	
UHLENHAKE, JASON S	
ART UNIT	PAPER NUMBER
2853	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,781	OGASAWARA, SEIJI	
	Examiner	Art Unit	
	Jason Uhlenhake	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2-4* is/are allowed.

6)☒ Claim(s) *1, 5-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2002/0105558) in view of Otsuki (U.S. Pub. 2004/0207674)

Otsuki discloses:

- ***regarding claims 1, 7,*** ink jet printing apparatus comprising print medium conveying means for conveying a print medium, scanning means for moving a print head that ejects ink droplets along a main scanning direction crossing a direction which print medium is conveyed, print control means for controlling an operation performed by the print head to eject droplets (Figures 1, 6; Paragraph 0009)

- first printing control means for allowing formation of test patterns used to adjust landing positions of ink droplets in the main scanning direction, the ink droplets ejected by the print head onto the print medium (Abstract, Paragraphs 0012-0013)

- second printing control means for setting second adjustment values on the basis of first landing position adjustment values for the ink droplets determined on the basis of the test patterns (Abstract, Paragraphs 0010, 0012)

Otsuki ('558) does not disclose expressly:

- ***regarding claims 1, 7,*** predetermined correction values corresponding to each of a plurality of areas divided along the conveying direction of the print medium, and controlling the operation preformed by the print head to eject ink droplets in the main scanning direction on the basis of the second adjustment values

Otsuki ('674) discloses:

- ***regarding claims 1, 7,*** predetermined correction values corresponding to each of a plurality of areas divided along the conveying direction (bi-directional scans) of the print medium, and controlling the operation preformed by the print head to eject ink droplets in the main scanning direction on the basis of the second adjustment values (Paragraph 0007), for the purpose of improving picture quality when performing bi-directional printing

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Otsuki ('674) into the device of Otsuki (558), for the purpose of improving picture quality when performing bi-directional printing

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2004/0207674) in view of Otsuki (U.S. Pub. 2002/0105558)

Otsuki ('674) discloses:

- ***regarding claim 8,*** ink jet printing apparatus comprising conveying means for conveying printing medium along a conveying direction, scanning means for reciprocally moving a print head that ejects ink droplets along a main direction crossing

the conveying direction, print control means to eject droplets while printing head is reciprocally moved by scanning means (Paragraph 0007)

- ***regarding claim 8,*** registration means for adjusting an ink ejecting timing form printing head in forward scanning and backward scanning according to and adjusting value; control means for controlling registration means to adjust the ink ejecting timing using the adjustment value corresponding to the position of the printing medium conveyed; wherein said control means controls said registration means so that the adjustment value is used to adjust the ink ejecting timing out of a plurality of adjustment values corresponding to the position of the printing medium (Paragraphs 0007, 0038, 0040, 0064)

Otsuki ('674) does not disclose expressly the following:

- ***regarding claim 8,*** plurality of adjustment values are determined on the basis of a first adjustment value for adjusting landing positions of ink droplets in the main scanning direction and predetermined correction values corresponding to the positions in the conveying direction

Otsuki ('558) discloses:

- ***regarding claim 8,*** plurality of adjustment values are determined on the basis of a first adjustment value for adjusting landing positions of ink droplets in the main scanning direction and predetermined correction values corresponding to the positions in the conveying direction, for the purpose of improving picture quality when performing bi-directional printing

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Otsuki ('558) into the device of Otsuki ('674), for the purpose of improving picture quality when performing bi-directional printing

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2004/0207674) in view of Cheng et al (U.S. Pub. 2002/0196298).

Otsuki discloses:

- ***regarding claim 5,*** ink jet printing apparatus comprising print medium conveying means for conveying a print medium, scanning means for moving a print head that ejects ink droplets along a main scanning direction crossing a direction which print medium is conveyed, print control means for controlling an operation performed by the print head to eject droplets (Paragraph 0007)
- first printing control means (103) for allowing formation of test patterns used to adjust landing positions of ink droplets (Paragraph 0041)
- acquiring means (stored in the position adjustment storage 47) for acquiring landing position adjustment values used to adjust landing position of ink droplets in the main scanning direction for each scan of said print head in accordance with landing position adjustment values for the first ink droplets determined on the basis of the test patterns (Paragraphs 0007, 0041)
- second printing control means (102) wherein an operation performed by print head to eject ink droplets in the main scanning direction is controlled on the basis

of the landing position adjustment values acquired by acquiring means (Paragraph 0007)

Otsuki does not disclose expressly:

- ***regarding claim 5,*** detecting means for detecting a distance between print element arranged surface of print head and a surface of the print medium

Cheng et al discloses:

- ***regarding claim 5,*** detecting means for detecting a distance between print element arranged surface of print head and a surface of the print medium (Abstract; Paragraph 0014), for the purpose of determining an adjusted ink ejection frequency.

At the time the invention was made, it would have been obvious for a person of ordinary skill in the art to incorporate the teaching of detecting means for detecting a distance between print element arranged surface of print head and a surface of the print medium as taught by Cheng et al into the device of Otsuki, for the purpose of determining an adjusted ink ejection frequency.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2004/0207674) in view of Yamada et al (U.S. Pat. 6,604,806).

Otsuki discloses:

- ***regarding claim 6, ,*** ink jet printing apparatus comprising print medium conveying means for conveying a print medium, scanning means for moving a print head that ejects ink droplets along a main scanning direction crossing a direction which

print medium is conveyed, print control means for controlling an operation performed by the print head to eject droplets (Paragraph 0007)

- first printing control means (103) for allowing formation of test patterns used to adjust landing positions of ink droplets in the main scanning direction, the ink droplets ejected by the print head onto the print medium (Paragraph 0041)

- acquiring means (stored in the position adjustment storage 47) for acquiring second landing position adjustment values (set position adjustment value for each bi-directional print mode – two modes) used to adjust landing position of ink droplets in the main scanning direction for each scan of said print head on the basis of landing position adjustment values for first ink droplets determined on the basis of the test patterns, the ink droplets being ejected from said print head onto the print medium (Paragraphs 0007, 0041)

- wherein an operation performed by said print head to eject ink droplets in the main scanning direction is controlled on the basis of the second landing position adjustment values acquired by said acquiring means (Paragraph 0007)

Otsuki does not disclose expressly:

- ***regarding claim 6,*** adjust landing positions for each scan of said print head in accordance with printing density in the conveying direction of said print medium

Yamada et al discloses:

- ***regarding claim 6,*** adjust landing positions for each scan of said print head in accordance with printing density in the conveying direction of said print medium

(Column 4, Lines 17 – 26), for the purpose of obtaining the number of ink droplets required to be printed to obtain the required image resolution.

At the time the invention was made, it would have been obvious for a person of ordinary skill in the art to incorporate the teaching of Yamada et al into the device of Otsuki, for the purpose of obtaining the number of ink droplets required to print to obtain the required image resolution.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2004/0207674) in view of Otsuki et al (U.S. Pat. 6,527,360).

Otsuki ('674) discloses:

- ***regarding claim 10,*** ink jet printing apparatus comprising conveying means for conveying printing medium along a conveying direction, scanning means for reciprocally moving a print head that ejects ink droplets along a main direction crossing the conveying direction, print control means to eject droplets while printing head is reciprocally moved by scanning means (Paragraph 0007)

Otsuki ('674) does not disclose expressly:

- ***regarding claim 10,*** first adjusting step of ink ejecting timings in forward scanning and backward scanning of the printing head according to first adjusting value when printing medium Is in a first position in the said conveying direction;
- second adjusting step of ink ejection timing in forward scanning and backward scanning of the printing head according to a second adjusting value which is set by applying a predetermined accumulated value to the first landing position and is

different form the first adjusting value when printing medium is in a second position downstream of the first position

- ***regarding claim 11,*** wherein conveying means has a pair of rollers which are placed at a position upstream of a recording position by the print head in conveying direction, and first adjusting step is performed when a trailing end of the printing medium to be conveyed by a trailing end of the printing medium to be conveyed by the conveying means is in a position upstream of the pair of rollers, second adjusting step is performed when a trailing end of the printing medium is in the downstream of the pair of rollers

Otsuki ('360) discloses:

- ***regarding claim 10,*** first adjusting step (upper routine) of ink ejecting timings in forward scanning and backward scanning of the printing head according to first adjusting value (nozzles disposed opposite the downstream slot) when printing medium Is in a first position in the said conveying direction;
- second adjusting step (lower routine) of ink ejection timing in forward scanning and backward scanning of the printing head according to a second adjusting value (nozzles disposed opposite the upstream slot) which is set by applying a predetermined accumulated value (Column 12, Lines 41-55) to the first landing position and is different form the first adjusting value when printing medium is in a second position downstream of the first position (Column 12, Lines 16-36), for the purpose of accurately printing images on a print medium.

- ***regarding claim 11,*** wherein conveying means has a pair of rollers which are placed at a position upstream of a recording position by the print head in conveying direction, and first adjusting step is performed when a trailing end of the printing medium to be conveyed by a trailing end of the printing medium to be conveyed by the conveying means is in a position upstream of the pair of rollers, second adjusting step is performed when a trailing end of the printing medium is in the downstream of the pair of rollers (Column 10, Lines 35 – 50; Column 3, Lines 36 – 46; Column 12, Lines 16 - 37), for the purpose of accurately printing images on a print medium.

At the time the invention was made it would have been obvious to a person or ordinary skill in the art to incorporate the teaching of Otsuki ('360) into the device of Otsuki ('674), for the purpose of accurately printing images on a print medium.

Claim 9 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki (U.S. Pub. 2004/0207674) in view of Otsuki et al (U.S. Pat. 6,527,360).

Otsuki (674) discloses:

- ***regarding claim 9,*** control means to control registration means so as to use different adjusting values (Paragraphs 0041, 0064)

Otsuki (674) does not expressly disclose:

- ***regarding claim 9,*** wherein conveying means has at least a pair of rollers which are placed at a portion upstream of recording position by the printing head in conveying direction, and use different adjustment values whether or not a trailing end of

the printing medium depending on conveyed is in a position upstream of the pair of rollers or not

Otsuki et al ('360) discloses:

- ***regarding claim 9,*** wherein conveying means has at least a pair of rollers which are placed at a portion upstream of recording position by the printing head in conveying direction, and use different adjustment values whether or not a trailing end of the printing medium depending on conveyed is in a position upstream of the pair of rollers or not (Column 10, Lines 35 – 50; Column 3, Lines 36 – 46; Column 12, Lines 16 - 37) , for the purpose of accurately printing images on a print medium.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teachings of Otsuki ('360) et al into the device of Otsuki ('674). The motivation for doing so would have been to properly convey the print medium and the purpose of accurately printing images on a print medium.

Response to Arguments

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

The primary reason for the allowance of claim 2 is the inclusion of the limitation of wherein before a trailing edge of the print medium passes through the conveying

means, the second printing control means performs an ink ejecting operation on the basis of a first landing position adjustment value, and after a trailing edge of the print medium passes through the conveying means, on the basis of a second landing position adjustment value determined on the basis of the first landing position adjustment value and a correction value, the second landing position adjustment value being different from the first landing position adjustment value. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of 3-4 is the inclusion of the limitation of wherein before the trailing edge of the print medium passes through the print medium conveying means, the second printing control means performs an ink ejecting operation on the basis of a first landing position adjustment value determined from the first test pattern, and after the trailing edge of the print medium has passed through the pair of rollers, the second printing control means performs an ink ejecting operation on the basis of a second landing position adjustment value determined from the second test pattern. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Uhlenhake whose telephone number is (571) 272-5916. The examiner can normally be reached on Monday - Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSU
February 28, 2007

STEPHEN MEIER
SUPERVISORY PATENT EXAMINER